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DESCRIPTION

METHOD AND APPARATUS FOR MANUFACTURING BOLT, THREAD ROLLING DIE  
FOR USE THEREIN, AND MULTIPLE SCREW BOLT

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<sup>5</sup>1 This application is a 35 USC 371 of PCT/JP04/03788 filed 03/19/2004.

TECHNICAL FIELD

The present invention relates to a method and apparatus for manufacturing a bolt having an anti-loosening function, a thread rolling die for use therein, and a multiple screw bolt.

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Background Art

In recent years, research and development have been conducted on various types of bolts having anti-loosening functions and methods of manufacturing the same. For example, International Publication Pamphlet No. 02/077466 (hereinafter, referred to as "patent document 1") describes a bolt which comprises a coarse screw portion having a pitch of P, formed from the extremity to a predetermined part of the bolt shank, and a fine screw portion having a pitch of p ( $p = P/n$ ; n is an integer no smaller than 2), formed at least over the entire length of the coarse screw portion of the bolt shank or so as to overlap with the coarse screw portion from the extremity to a predetermined part of the coarse screw portion.

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With this bolt (so-called double screw bolt), a coarse nut is threadedly engaged with the coarse screw portion of the bolt and then a fine nut is threadedly engaged with the fine screw portion in addition to this coarse nut, so that the bolt and the two nuts can be fastened to each other. Here, since the fine nut and the coarse nut have different pitches, a repulsive force occurs on the contact surface (bearing surface) between the two nuts when the two rotate together in the same direction. This makes it possible to prevent the coarse nut from

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ATTACHMENT "B"